

## **APPENDIX A**

### **Engineering Trip Report**

### **Dinkey Creek Reservoir**



## Field Trip Log

<b>Trip Log Number:</b>	15	<b>Project No.:</b>	1003032.01180502
<b>Dates:</b>	6/13/02	<b>Times:</b>	1520-1615
<b>Site Name:</b>	New Dinkey Creek	<b>Location:</b>	Dinkey Creek
<b>Prepared By:</b>	DKR/JMH/WAM	<b>Reviewed By:</b>	
<b>Date:</b>	6/13/02	<b>Date:</b>	

<b>Attendees/Visitors Name</b>	<b>1.1.1.1.1.1 Organization/Phone/Email</b>
DKR	MWH, 925.685.6275 x125, david.k.rogers@ei.mwhglobal.com
JMH	MWH, 925.685.6275 x143, <a href="mailto:james.m.herbert@ei.mhwglobal.com">james.m.herbert@ei.mhwglobal.com</a>
WAM	MWH, 425.602.4025 x1060, william.a.moler@ei.mwhglobal.com

**Weather Conditions:**

Clear, warm (low 80s), light breeze

**Access Route (attach map):**

Highway 99, Shaw Av / State highway 168 (E) through north Fresno, to Shaver Lake and Dinkey Creek Rd

<b>Attachments:</b>	<b>Yes</b>	<b>No</b>
Photo Log	✓	
Photos	✓	
Video Log (available)	✓	
Dictation Log (available)	✓	
Topographic Map	✓	

**Purpose:**

Review proposed location of new damsite.

## **Field Observations:**

### **Existing Structures/Cultural Features:**

A U.S. Forest Service Ranger Station, scattered residences, group and individual campgrounds, a historic bridge (National Register of Historic Places) were observed or reported in the area upstream of the proposed new dam.

The historic bridge is a redwood truss structure that may be the only one of its kind in California. It was among the first bridges in America to utilize steel, split-ring timber-connecting devices, and it was one of the first bowstring arch truss bridges in California. The Civilian Conservation Corps assembled the bridge over Dinkey Creek in 1938, using redwood cut on the coast and fabricated into trusses in Monterey.

### **Right of Way/Access Restrictions:**

Public and Forest Service roads lead to the new Dinkey Creek Dam and Reservoir area.

### **Overhead/Buried Utilities:**

Overhead / underground utilities provide some service to the area.

### **Description of Proposed Structures (attached a field sketch or sketch on a topo map):**

Per URS, the proposed dam at Dinkey Creek would be located in Sierra National Forest at an elevation of ~5,425 ft. The dam would be a concrete-faced rockfill embankment having a height of up to 395 feet above streambed level, that would store up to 200,000 ac-ft of water, and spillway and outlet works. Water would come from natural run-off from the ~22,000 ac watershed (URS, 2000).

An earlier IECO alternative at the same general location consisted of an ~340-ft high, 1,600-ft long, zoned rockfill dam with the spillway located on the right abutment. Full reservoir capacity was estimated at 90,000 ac-ft (IECO, 1974).

### **Description of Appurtenant Features (spillways, tunnels, pumping plants, flood routing/coffer dams/dewatering during construction, outlet works, switch yards, transformer yards, transmission lines, conveyance pipelines/canals, access roads, security, operation/maintenance):**

The dam summarized in the IECO report would consist of a zoned rockfill embankment structure, 70-ft wide right abutment spillway with discharge bucket, two power plants, diversion dam and connecting tunnels and penstock. A 22,000-ft, 10-ft wide, horseshoe-shaped tunnel and penstock would extend from the main storage reservoir along the right side of Dinkey Creek to a 21.5-ft diameter by 263-ft high surge tank and Power Plant No. 1 (IECO, 1974).

A small (30-ft high, 5 ac-ft storage) diversion dam located downstream of Power Plant No. 1 would divert the water from tunnel No. 1, as well as the runoff from the watershed between the main reservoir and the diversion dam, into a second, 24,000-ft long, 10-ft diameter tunnel. The tunnel would direct water to a 28.5-ft diameter by 265-ft high surge tank that leads to Power Plant No. 2 via a penstock near Balch Camp on the North Fork of the Kings River (IECO, 1974).

Power Plant No. 1 would consist of a single 26,000kW unit, while Power Plant No. 2 would consist of a single 63,000 kW unit (IECO, 1974).

### **Briefly Describe Geologic/Geotechnical Site Conditions:**

The New Dinkey Creek project would be located relatively high in the Sierra Nevada. The state geologic map shows that Mesozoic granitics with scattered small exposures of Mesozoic basic intrusive rocks and pre-Cretaceous meta-sedimentary rocks. Quaternary glacial deposits are found farther up the Dinkey Creek drainage and in surrounding areas (CDMG, 1965 and 1967).

The IECO report states that Lower Cretaceous granitics underlie a considerable area in the Dinkey Creek damsite area. Narrow basic stringers of aplite and felsic dikes intrude the bedrock locally, and scattered, small roof pedants of metasedimentary rocks are found within a mile of the site. A small thrust fault has been identified about 6 miles northeast of the site, in the Huntington Lake Quadrangle (IECO, 1974).

Dinkey Creek has cut a deep, narrow gorge that is near 150 feet deep in places. As such, the final damsite could vary over a distance of a few hundred feet. In general, the steep lower portions of both dam abutments expose fresh, very hard granite that varies from slightly fractured to massive. Higher up the canyon walls, the rock is slightly weathered and somewhat more fractured, with exfoliation and stress relief fractures becoming more evident. Bedrock is covered in a few scattered locations by thin talus deposits and large blocks of loose rock. Some angular granitic blocks exceed 20 feet in their maximum dimension (IECO, 1974).

The creek channel is filled by Dinkey Creek. Large scattered boulders within the narrow gorge are presumably underlain by hard, competent granitic bedrock. Potholes are found locally up to 10 feet in diameter (IECO, 1974).

In the left abutment, a three-dimensional joint pattern is evident. Most fractures appear to be tight. Higher up, a small talus/slope wash filled gully traverses the center of the abutment. Downstream of the abutment, alluvium has accumulated near the confluence with Laurel Creek (IECO, 1974).

On the right abutment, there are a greater number of large, loose granitic blocks than on the left abutment. Near the downstream end of the rock mass, is a large (10' x 20' x 50') block of loose, exfoliated granite and farther on is a steep ravine containing slope wash and talus (IECO, 1974). The proposed spillway is located on the right abutment. Excavation in this location will be in fresh, slightly fractures granite. Because a relatively deep cut is anticipated, rock bolting of the excavation should be anticipated (IECO, 1974).

Water in the designed reservoir would be impounded up to level near a bridge across Dinkey Creek and close to the Ranger Station. Slightly fractured bedrock, locally obscured by talus and slope wash, is exposed over much of the reservoir area. Alluvial deposits occur within Dinky Meadow Creek and downstream of its confluence with Dinkey Creek. Reservoir leakage is expected to be minimal. Large existing or potential landslides have not been identified; therefore, only minor slumps from steeper slopes are expected upon reservoir filling (IECO, 1974).

The areas traversed by tunnels and appurtenant structures downstream of Dinkey Creek are composed essentially of granitic rock. In general, it is expected that the granitic rock is relatively unweathered and only slightly fractured, and tunnel support is not expected. However, there appears to be four different granitic rock types. Contact zones between these granitic plutons may be quite fractured and tunnel support may be required in these intervals. Furthermore, some metasedimentary and basic intrusive rocks are found in the area, and as such, portions of the tunnels may penetrate these units, depending upon selection of the final alignment and support may be required. Moderate water flow should be anticipated in the more closely fractured zones. Methane and toxic gases are not expected (IECO, 1974).

As with most sites in the region, studies indicate that there are no faults in the area capable of producing ground motions greater than those generated by four known regional sources that include the San Andreas fault system, the Sierra Frontal fault system, the White Wolf fault, and the Garlock fault (USCOE, 1990).

**Location/Description of Nearest Borrow Areas (attach map or show on topo map):**

Construction material studies have not been conducted; however, potential borrow areas were noted. Impervious material deposits were not noted, but exploration of some relatively level meadow areas may reveal suitable materials in sufficient quantities. Pervious materials occur in alluvial deposits along Dinkey Creek about 1 mile upstream of the damsite and along Dinkey Meadow Creek. The quantity and quality of these deposits warrant investigation. Numerous potential quarry sites for riprap, rockfill, and concrete aggregate are found within the damsite vicinity (IECO, 1974).

**Location/Description of Equipment/Material Staging and Lay Down Areas (attach map or show on topo map):**

Potential staging and laydown areas may be found in the Dinkey Meadow area upstream of the proposed damsite.

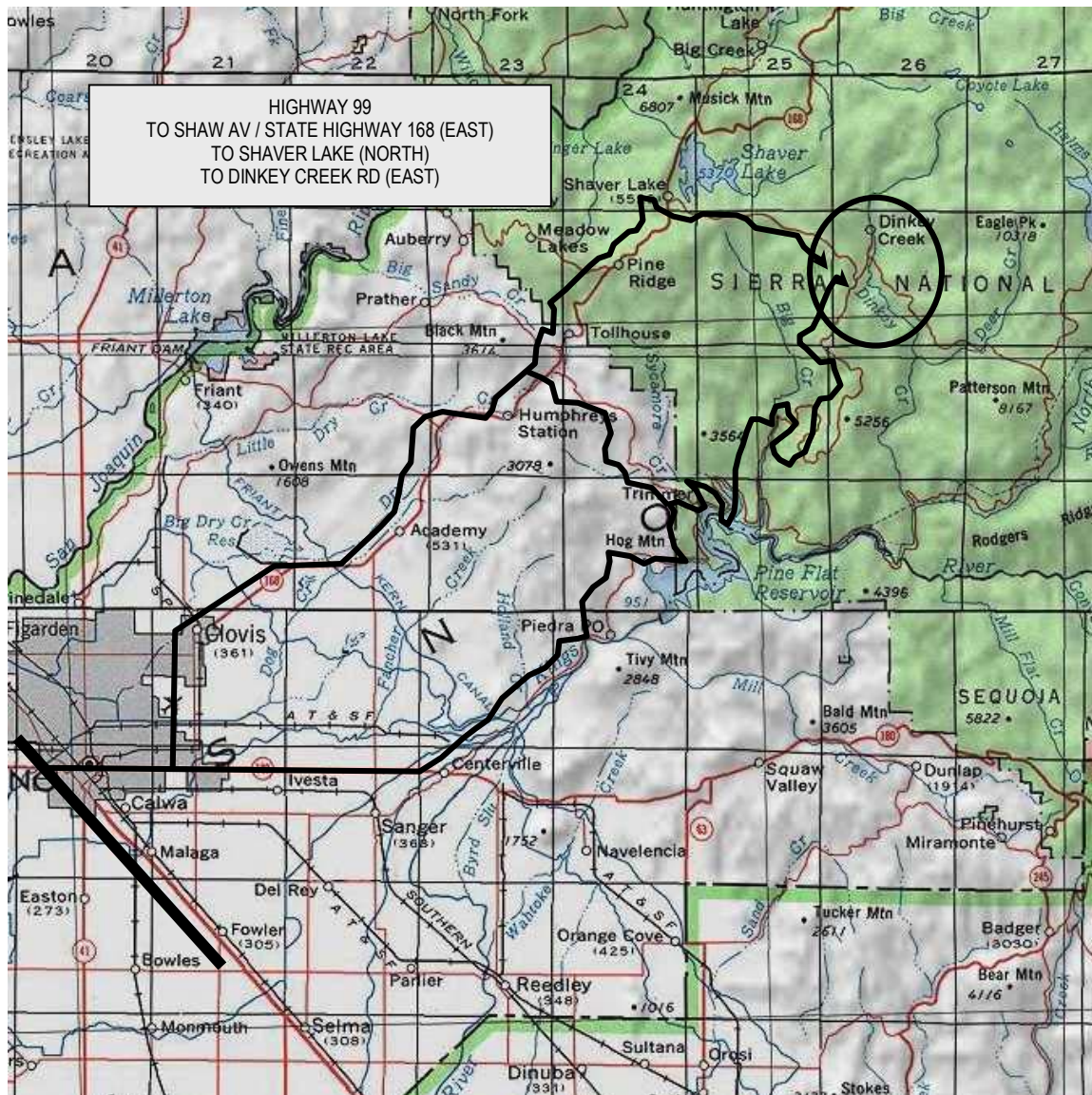
**Identification of Environmental Sensitive Areas (wetlands, springs, rivers, streams, endangered/threatened species habitats, etc.):**

Riparian, wetland, and aquatic habitats are found along Dinkey Creek. Pine forest habitats are found above the creek.

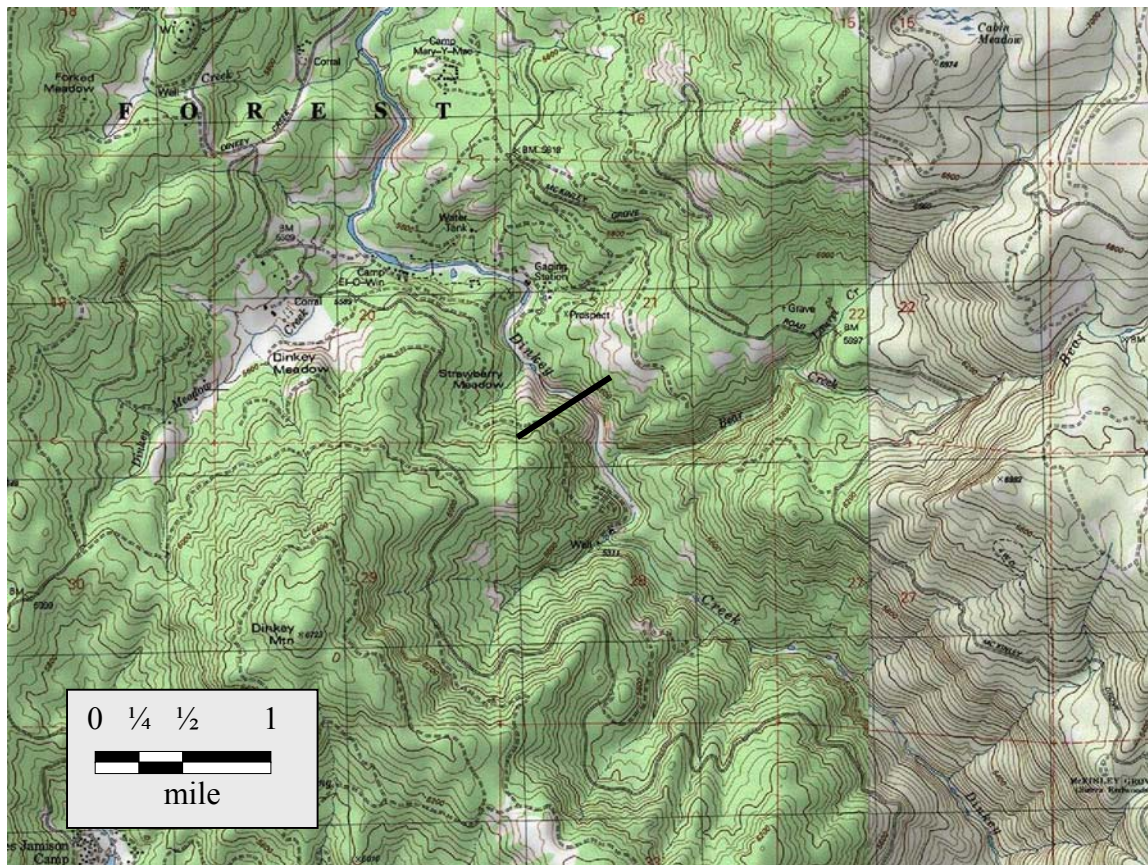
The Kings River in this area has been designated as Wild and Scenic, and is actively used by a number of river rafting enterprises. As such, the project would be extremely difficult to permit (URS, 2000).

**Description of Mining or Other Anthropologic Activities:**

None were noted.











Dinkey Creek – Downstream view toward proposed damsite.



View down into stream canyon from near right abutment of proposed dam.